

# Age at diagnosis for lung, colon, breast, and prostate cancers: An international comparative study

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**Purpose:** We compared the median ages at diagnosis for the four most common cancer types (lung, colon, female breast, and prostate cancers) across different countries worldwide after removing differences due to variation in population age distributions.

**Methods:** We analyzed the Cancer Incidence in 5 Continents (CI5) Volume XI database, including cancer registries in 63 countries during 2008-2012. We calculated crude median ages at diagnosis for each cancer in each country, and then performed indirect standardization to remove the impact of different population age distributions.

**Results:** Before standardization, the median ages at cancer diagnosis varied across countries by up to 20 years. Age standardization changed the calculated median ages by up to 10 years, typically by increasing ages in low and middle income countries (LMICs) which have younger populations, and decreasing them in high income countries (HICs). After standardization, differences between the youngest and oldest median ages at diagnosis were: 12 years for lung (median age 61 in Bulgaria vs 73 in Bahrain), 12 years for colon (60 in Iran vs 72 in Peru), 10 years for breast (49 in Algeria, Iran and Korea vs 59 in USA and others), and 10 years for prostate cancer (65 in USA and Lithuania vs 75 in Philippines). LMICs had younger ages at diagnosis for colon cancer but older ages at diagnosis for prostate cancer compared with HICs (p-wilcoxon test LMICs vs HICs < 0.001 for both colon and prostate). Countries with higher smoking prevalence had younger ages at lung cancer diagnosis (p-corr=0.001), and ages at breast cancer diagnosis were younger in Asia (East Asia and Middle East) and Africa.

**Conclusion:** For lung, colon, breast, and prostate cancers, differences across countries in the median age at diagnosis range from 10 to 12 years after adjusting for population age distribution. These differences likely reflect population-level variation in risk factors and screening.

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